

2. PHYSICAL FEATURES

2.1 INTRODUCTION

The Bay of Bengal is open to the Indian Ocean to the south only; in other directions the bay is surrounded by land, much of it extremely mountainous. The land masses around the bay have a profound effect on the weather regimes of the area and a knowledge of the relevant physical features of these land masses is essential to an understanding of the meteorological phenomena affecting the Bay of Bengal.

2.2 LOCATION

The peninsula forming the sub-continent of India (see Figure 2-1) has its north base resting on the Himalayan Massif and extends southward into the Indian Ocean. The island of Ceylon lies off the southeastern tip of India, the combined land mass extending southwards to about 6 degrees north of the equator. The wedge-shaped Indian Peninsula divides the northern part of the Indian Ocean into two main seas; to the west of the Peninsula lies the Arabian Sea, while to the east lies the Bay of Bengal.

In the north, the head of the Bay of Bengal is formed by the low-lying, densely populated area known as the Mouths of the Ganges. In the northeast the bay is bounded by Burma, and in the east by a line connecting the southwest tip of Burma (Cape Negrais), the Andaman and Nicobar Islands, and northwest Sumatra (Kutaradja). This line separates the Bay of Bengal (to the west) from the Andaman Sea (to the east). However, in this Handbook, the term Bay of Bengal will be used to include both the bay proper and the Andaman Sea.

2.3 OROGRAPHY

Figure 2-1 shows a simplified picture of the elevation of the relevant land masses surrounding the Bay of Bengal.

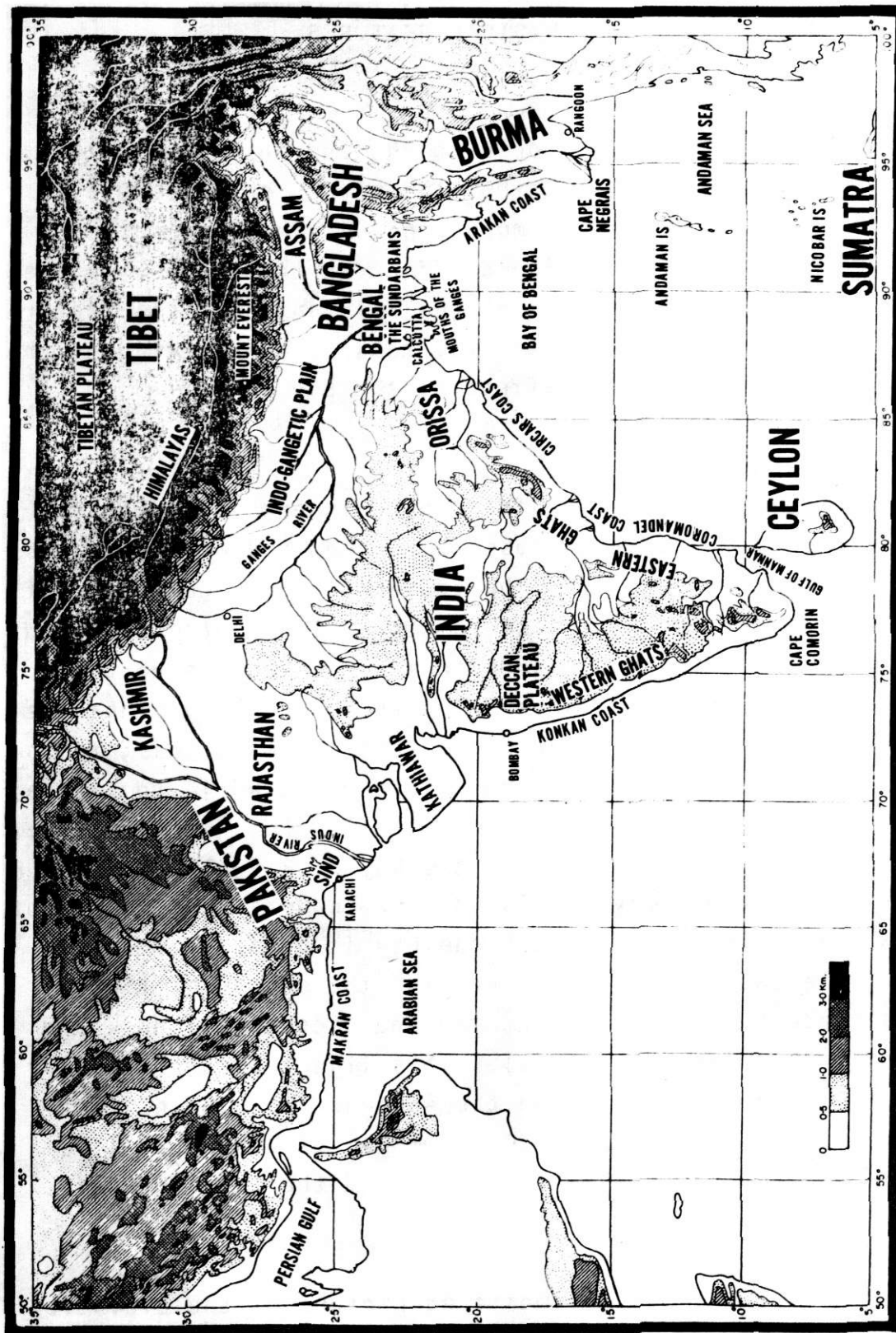


Figure 2-1. Locator map of Indian subcontinent

A more detailed map should be studied to gain a better appreciation of the orographic features.

South of about 20N the Indian Peninsula is surrounded by a relatively narrow coastal strip. Further inland the ground rises fairly sharply to the Deccan Plateau which has a mean height of less than 3,000 ft. Worthy of mention are the mountain chains known as the Western and Eastern Ghats.

The Western Ghats, shown in Figure 2-1, lie along the western coast of India south of about 20N. They are most prominent in the south, reaching a maximum height of about 8,000 ft. This coast has the wettest climate of the whole peninsula, the rainfall being particularly heavy on the slopes of the Western Ghats during the southwest monsoon of summer. The Eastern Ghats lie along the eastern coast of India south of about 20N. They are not nearly as well defined as the Western Ghats and are also situated further from the coast, the mean width of the eastern coastal plain being about 80 miles. The Eastern Ghats comprise groups of hills which rise to 2,000 to 4,500 ft and are intersected by various rivers flowing into the Bay of Bengal.

To the north of the Deccan Plateau, the Indo-Gangetic Plain continues to the foothills of the Himalayan Massif. To the west lies the low-lying area associated with the Indus River flowing into the Arabian Sea. To the east lies the vast drainage area associated with the Ganges, the Mouths of the Ganges forming the head of the Bay of Bengal.

Further north, the low-lying areas give way abruptly to the Himalayan Massif including the Tibetan Plateau. This area has a mean height of about 14,000 ft and there are extensive areas lying above 18,000 ft. The maximum height is, of course, the peak of Mount Everest -- 29,028 ft. This vast massif intrudes into the mid-troposphere (e.g., 500 mb)

and has a very significant effect on the hemispheric circulations at all levels, including the weather regimes of the Bay of Bengal.

The northeastern and eastern shores of the bay are shielded partially by extensions of the Himalayan Massif. One such extension runs almost due south down the western coast of Burma, the tops of some of the submerged peaks forming the Andaman and Nicobar Islands. These islands have no significant height, meteorologically speaking, but the Himalayan extension eventually rises from the ocean to form Sumatra and the off-shore islands. Sumatra has a backbone of mountains reaching heights of about 10,000 ft. The mountains along the west coast of Burma are backed by other higher ranges within the Indo-China Peninsula.